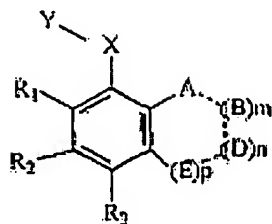


CLAIMS

1. The use of compounds of General Formula I



Formula I

5

wherein:

X represents O, S;

Y represents H or, along with X, where X = O, a carbohydrate radical;

A represents N or NR<sub>4</sub>;

10

B represents CR<sub>5</sub>, NR<sub>5</sub> or N;

D represents CR<sub>6</sub>, NR<sub>6</sub> or N;

E represents CR<sub>7</sub>, NR<sub>7</sub> or N;

with the condition that the ring containing group A has a maximum of two nitrogen atoms in its structure;

15

m, n and p represent: 0 or 1, where m + n + p = 2 or 3;

the dashed lines - - - represent a single or double bond;

20

R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub> and R<sub>7</sub> each independently represent a radioactive isotope, H, a halogen or a radical optionally having a radioactive isotope, said radical being chosen from: C<sub>1</sub>-C<sub>6</sub> alkyl, OH, C<sub>1</sub>-C<sub>6</sub> polyhydroxyalkyl, C<sub>1</sub>-C<sub>6</sub> alkoxyl, C<sub>1</sub>-C<sub>6</sub> alkoxyalkyl, (CH<sub>2</sub>)<sub>q</sub>-OR', wherein q is 1, 2 or 3, CF<sub>3</sub>, CH<sub>2</sub>-CH<sub>2</sub>F, O-CH<sub>2</sub>-CH<sub>2</sub>F, CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>F, CN, NO<sub>2</sub>, O(CO)R', OR', SR', COOR' -SO<sub>3</sub>H, (CH<sub>2</sub>)<sub>r</sub>-CO<sub>2</sub>R'', (CH<sub>2</sub>)<sub>r</sub>-CO-R', wherein r is 1, 2 or 3 and Rph, wherein Rph represents a non substituted or

25

substituted phenol group, the possible substituents of the phenol group being any of the meanings of  $R_1$ - $R_7$  except for a phenol group;

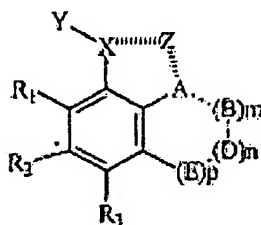
$R'$  is H or a  $C_{1-3}$  alkyl group;

5  $R''$  is H, a  $C_1$ - $C_6$  alkyl group or a  $C_1$ - $C_6$  alkyloxy group;

with the condition that only one of  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$ ,  $R_5$ ,  $R_6$ ,  $R_7$ , X and Y is or has a radioactive isotope;

10 in the preparation of a composition for diagnosis and/or monitoring of diseases associated with the formation of amyloid protein fibrils, particularly those that appear as amyloid plaques and affect the central nervous system.

## 2. The use of compounds of General Formula II.



15

Formula II

wherein:

X represents O, S;

20 Y represents H or, along with X, where  $X = O$ , a carbohydrate radical;

Z represents a metal or rare earth cation that may or may not be radioactive;

the ||||| line represents a coordinate bond;

A represents N or  $NR_4$ ;

25 B represents  $CR_5$ ,  $NR_5$  or N;

D represents  $CR_6$ ,  $NR_6$  or N;

E represents  $CR_7$ ,  $NR_7$  or N;

with the condition that the ring containing substituent A has a maximum of two nitrogen atoms

in its structure;

m, n and p represent: 0 or 1, where  $m + n + p = 2$  or 3;

the dashed lines - - - - represent a single or double bond;

$R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$ ,  $R_5$ ,  $R_6$  and  $R_7$  each independently represent a radioactive isotope, H, a halogen or a radical optionally having a radioactive isotope, said radical being chosen from:  $C_1$ - $C_6$  alkyl, OH,  $C_1$ - $C_6$  polyhydroxyalkyl,  $C_1$ - $C_6$  alkoxy,  $C_1$ - $C_6$  alkoxyalkyl,  $(CH_2)_q$ -OR', wherein q is 1, 2 or 3,  $CF_3$ ,  $CH_2$ - $CH_2$ F,  $O$ - $CH_2$ - $CH_2$ F,  $CH_2$ - $CH_2$ - $CH_2$ F, CN,  $NO_2$ ,  $O(CO)R'$ ,  $OR'$ ,  $SR'$ ,  $COOR'$ ,  $-SO_3H$ ,  $(CH_2)_r$ - $CO_2R''$ ,  $(CH_2)_r$ -CO-R', wherein r is 1, 2 or 3 and Rph, wherein Rph represents a non substituted or substituted phenol group, the possible substituents of the phenol group being any of the meanings of  $R_1$ - $R_7$  except for a phenol group;

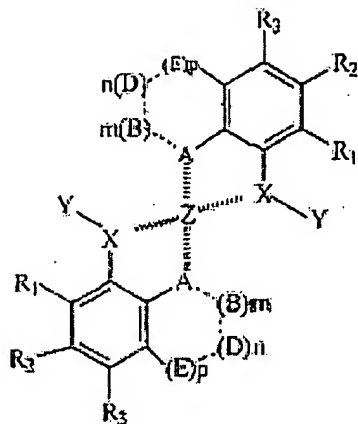
$R'$  is H or a  $C_{1-3}$  alkyl group;

$R''$  is H, a  $C_1$ - $C_6$  alkyl group or a  $C_1$ - $C_6$  alkyloxy group;

with the condition that only one of  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$ ,  $R_5$ ,  $R_6$ ,  $R_7$ , X, Y or Z is or has a radioactive isotope;

in the preparation of a composition for diagnosis and/or monitoring of diseases associated with the formation of amyloid protein fibrils, particularly those that appear as amyloid plaques and affect the central nervous system.

### 3. The use of compounds of General Formula III.



Formula III

wherein:

X represents O, S;

5 Y represents H or, along with X, where X = O, a carbohydrate radical;

Z represents a metal or rare earth cation that may or may not be radioactive;

the ||||| line represents a coordinate bond;

10 A represents N or NR<sub>4</sub>;

B represents CR<sub>5</sub>, NR<sub>5</sub> or N;

D represents CR<sub>6</sub>, NR<sub>6</sub> or N;

E represents CR<sub>7</sub>, NR<sub>7</sub> or N;

15 with the condition that the ring containing substituent A has a maximum of two nitrogen atoms in its structure;

m, n and p represent: 0 or 1, where m + n + p = 2 or 3;

20 the dashed lines - - - - represent a single or double bond;

R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub> and R<sub>7</sub>, each independently represent a radioactive isotope, H, a halogen or a radical optionally having a radioactive isotope, said radical being chosen from: C<sub>1</sub>-C<sub>6</sub> alkyl, OH, C<sub>1</sub>-C<sub>6</sub> polyhydroxyalkyl, C<sub>1</sub>-C<sub>6</sub> alkoxyl, C<sub>1</sub>-C<sub>6</sub>

25

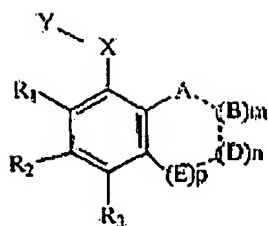
alkoxyalkyl,  $(CH_2)_q-OR'$ , wherein  $q$  is 1, 2 or 3,  
 $CF_3$ ,  $CH_2-CH_2F$ ,  $O-CH_2-CH_2F$ ,  $CH_2-CH_2-CH_2F$ ,  $CN$ ,  $NO_2$ ,  
 $O(CO)R'$ ,  $OR'$ ,  $SR'$ ,  $COOR'$ ,  $-SO_3H$ ,  $(CH_2)_r-CO_2R''$ ,  
 $(CH_2)_r-CO-R'$ , wherein  $r$  is 1, 2 or 3 and Rph,  
 5 wherein Rph represents a non substituted or  
 substituted phenol group, the possible substituents  
 of the phenol group being any of the meanings of  
 $R_1-R_7$  except for a phenol group;  
 $R'$  is H or a  $C_{1-3}$  alkyl group;  
 10  $R''$  is H, a  $C_1-C_6$  alkyl group or a  $C_1-C_6$  alkyloxy  
 group;

with the condition that only one of  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$ ,  $R_5$ ,  
 $R_6$ ,  $R_7$ , X, Y or Z is or has a radioactive isotope;

15 in the preparation of a composition for diagnosis and/or  
 monitoring of diseases associated with the formation of  
 amyloid protein fibrils, particularly those that appear as  
 amyloid plaques and affect the central nervous system.

20 4. Use according to claims 1, 2 and 3 for diagnosis  
 and/or monitoring in animals, transgenic animals, and  
 particularly in humans, of diseases such as Alzheimer's,  
 Parkinson's, Huntington, cystic fibrosis, late onset diabetes,  
 motor neuron disease, Mediterranean fever, Muckle-Wells  
 syndrome, idiopathic myeloma, amyloid polyneuropathy, amyloid  
 25 cardiomyopathy, senile systemic amyloidosis, hereditary  
 cerebral haemorrhage with amyloidosis, Down syndrome,  
 Creutzfeld-Jacob disease, Kuru, Gerstmann-Straussler-Schienker  
 syndrome, thyroid medullar carcinoma, amyloid valve deposits,  
 amyloidosis in dialysis patients, inclusion body myositis,  
 30 amyloid muscular deposits, Sickle Cell Parkinson anaemia, type  
 2 diabetes, amongst others.

#### 5. Compounds of General Formula I



Formula I

wherein:

X represents O, S;

5 Y represents H or, along with X, where X = O, a carbohydrate radical;

A represents N or NR<sub>4</sub>;

B represents CR<sub>5</sub>, NR<sub>5</sub> or N;

D represents CR<sub>6</sub>, NR<sub>6</sub> or N;

10 E represents CR<sub>7</sub>, NR<sub>7</sub> or N;

with the condition that the ring containing substituent A has a maximum of two nitrogen atoms in its structure;

15 m, n and p represent: 0 or 1, where m + n + p = 2 or 3;

the dashed lines - - - represent a single or double bond;

20 R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub> and R<sub>7</sub> each independently represent a radioactive isotope, H, a halogen or a radical optionally having a radioactive isotope, said radical being chosen from: C<sub>1</sub>-C<sub>6</sub> alkyl, OH, C<sub>1</sub>-C<sub>6</sub> polyhydroxyalkyl, C<sub>1</sub>-C<sub>6</sub> alkoxyl, C<sub>1</sub>-C<sub>6</sub> alkoxyalkyl, (CH<sub>2</sub>)<sub>q</sub>-OR', wherein q is 1, 2 or 3, CF<sub>3</sub>, CH<sub>2</sub>-CH<sub>2</sub>F, O-CH<sub>2</sub>-CH<sub>2</sub>F, CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>F, CN, NO<sub>2</sub>,  
 25 O(CO)R', OR', SR', COOR' -SO<sub>3</sub>H, (CH<sub>2</sub>)<sub>r</sub>-CO<sub>2</sub>R'', (CH<sub>2</sub>)<sub>r</sub>-CO-R', wherein r is 1, 2 or 3 and Rph, wherein Rph represents a non substituted or substituted phenol group, the possible substituents of the phenol group being any of the meanings of

$R_1$ - $R_7$  except for a phenol group;

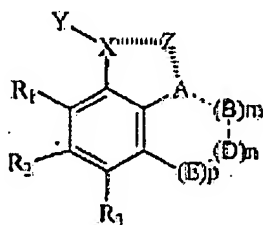
$R'$  is H or a  $C_{1-3}$  alkyl group;

$R''$  is H, a  $C_1$ - $C_6$  alkyl group or a  $C_1$ - $C_6$  alkyloxy group;

5 with the condition that  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$ ,  $R_5$ ,  $R_6$ ,  $R_7$ , X and Y are not all simultaneously H, and

with the condition that only one of  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$ ,  $R_5$ ,  $R_6$ ,  $R_7$ , X and Y is or has a radioactive isotope;

10 6. Compounds of General Formula II



Formula II

wherein:

X represents O, S;

15 Y represents H or, along with X, where  $X = O$ , a carbohydrate radical;

Z represents a metal or rare earth cation that may or may not be radioactive;

the ||||| line represents a coordinate bond;

20 A represents N or  $NR_4$ ;

B represents  $CR_5$ ,  $NR_5$  or N;

D represents  $CR_6$ ,  $NR_6$  or N;

E represents  $CR_7$ ,  $NR_7$  or N;

25 with the condition that the ring containing group A has a maximum of two nitrogen atoms in its structure;

m, n and p represent: 0 or 1, where  $m + n + p = 2$  or 3;

the dashed lines - - - represent a single or

double bond;

$R_1, R_2, R_3, R_4, R_5, R_6$  and  $R_7$  each independently represent a radioactive isotope, H, a halogen or a radical optionally having a radioactive isotope, said radical being chosen from:  $C_1-C_6$  alkyl, OH,  $C_1-C_6$  polyhydroxyalkyl,  $C_1-C_6$  alkoxyl,  $C_1-C_6$  alkoxyalkyl,  $(CH_2)_q-OR'$ , wherein  $q$  is 1, 2 or 3,  $CF_3$ ,  $CH_2-CH_2F$ ,  $O-CH_2-CH_2F$ ,  $CH_2-CH_2-CH_2F$ , CN,  $NO_2$ ,  $O(CO)R'$ ,  $OR'$ ,  $SR'$ ,  $COOR'$ ,  $-SO_3H$ ,  $(CH_2)_r-CO_2R''$ ,  $(CH_2)_r-CO-R'$ , wherein  $r$  is 1, 2 or 3 and Rph; wherein Rph represents a non substituted or substituted phenol group, the possible substituents of the phenol group being any of the meanings of  $R_1-R_7$  except for a phenol group;

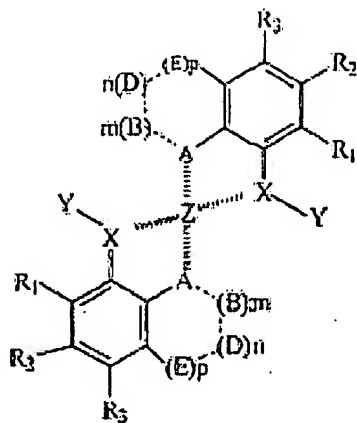
$R'$  is H or a  $C_{1-3}$  alkyl group;

$R''$  is H, a  $C_1-C_6$  alkyl group or a  $C_1-C_6$  alkyloxy group;

with the condition that  $R_1, R_2, R_3, R_4, R_5, R_6, R_7, X$  and  $Y$  are not all simultaneously H, and

with the condition that only one of  $R_1, R_2, R_3, R_4, R_5, R_6, R_7, X, Y$  or  $Z$  is or has a radioactive isotope;

#### 7. Compounds of General Formula III



Formula III



wherein:

X represents O, S;

Y represents H or, along with X, where  $X = O$ , a carbohydrate radical;

5 Z represents a metal or rare earth cation that may or may not be radioactive;

the ||||| line represents a coordinate bond;

A represents N or  $NR_4$ ;

B represents  $CR_5$ ,  $NR_5$  or N;

10 D represents  $CR_6$ ,  $NR_6$  or N;

E represents  $CR_7$ ,  $NR_7$  or N;

with the condition that the ring containing group A has a maximum of two nitrogen atoms in its structure;

15 m, n and p represent: 0 or 1, where  $m + n + p = 2$  or 3;

the dashed lines - - - represent a single or double bond;

20  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$ ,  $R_5$ ,  $R_6$  and  $R_7$  each independently represent a radioactive isotope, H, a halogen or a radical optionally having a radioactive isotope, said radical being chosen from:  $C_1$ - $C_6$  alkyl, OH,  $C_1$ - $C_6$  polyhydroxyalkyl,  $C_1$ - $C_6$  alkoxy,  $C_1$ - $C_6$  alkoxyalkyl,  $(CH_2)_q$ -OR', wherein q is 1, 2 or 3,

25  $CF_3$ ,  $CH_2$ - $CH_2$ F, O- $CH_2$ - $CH_2$ F,  $CH_2$ - $CH_2$ - $CH_2$ F, CN,  $NO_2$ , O(CO)R', OR', SR', COOR' - $SO_3H$ ,  $(CH_2)_r$ - $CO_2R''$ ,  $(CH_2)_r$ -CO-R', wherein r is 1, 2 or 3 and Rph, wherein Rph represents a non substituted or substituted phenol group, the possible substituents of the phenol group being any of the meanings of  $R_1$ - $R_7$  except for a phenol group;

R' is H or a  $C_{1-3}$  alkyl group;

R'' is H, a  $C_1$ - $C_6$  alkyl group or a  $C_1$ - $C_6$  alkyloxy group;

35 with the condition that only one of  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$ ,  $R_5$ ,

R<sub>6</sub>, R<sub>7</sub>, X, Y or Z is or has a radioactive isotope;

and with the condition that when

A is N;

B, D and E are all CH,

5

X is O, and

m, n and p are all 1,

then R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are not all H.

8. Compounds according to claim 5, characterised by being:

10

5-chloro-7-[<sup>123</sup>I]iodo-8-hydroxyquinoline

5-chloro-7-[<sup>124</sup>I]iodo-8-hydroxyquinoline

5-[<sup>123</sup>I]iodo-7-iodo-8-hydroxyquinoline

5-iodo-7-[<sup>123</sup>I]iodo-8-hydroxyquinoline

15

5-[<sup>124</sup>I]iodo-7-iodo-8-hydroxyquinoline

5-iodo-7-[<sup>124</sup>I]iodo-8-hydroxyquinoline

5-chloro-7-[<sup>18</sup>F]fluoro-8-hydroxyquinoline

5-[<sup>18</sup>F]fluoro-7-iodo-8-hydroxyquinoline

5-chloro-7-iodo-8-[<sup>11</sup>C]methoxyquinoline

20

5-chloro-7-[<sup>123</sup>I]iodo-8-hydroxyquinoline glucuronide

5-chloro-7-[<sup>124</sup>I]iodo-8-hydroxyquinoline glucuronide

5-chloro-7-[<sup>18</sup>F]fluoro-8-hydroxyquinoline glucuronide

5-[<sup>18</sup>F]fluoro-7-iodo-8-hydroxyquinoline glucuronide

5-chloro-7-iodo-8-[<sup>11</sup>C]methoxyquinoline glucuronide

25

5-[<sup>123</sup>I]-8-hydroxyquinoline

5-[<sup>124</sup>I]-8-hydroxyquinoline

7-[<sup>123</sup>I]-8-hydroxyquinoline

7-[<sup>124</sup>I]-8-hydroxyquinoline

5-[<sup>18</sup>F]-8-hydroxyquinoline

30

5-[<sup>18</sup>F]-8-hydroxyquinoline

9. Compounds according to claim 6:

5-chloro-7-[<sup>123</sup>I]iodo-8-hydroxyquinoline Fe(II) complex

5-chloro-7-[<sup>123</sup>I]iodo-8-hydroxyquinoline Cu(II) complex

35

5-chloro-7-[<sup>123</sup>I]iodo-8-hydroxyquinoline Zn(II) complex

	5-chloro-7-[ <sup>123</sup> I]iodo-8-hydroxyquinoline Mn(II) complex
	5-chloro-7-[ <sup>124</sup> I]iodo-8-hydroxyquinoline Fe(II) complex
	5-chloro-7-[ <sup>124</sup> I]iodo-8-hydroxyquinoline Cu(II) complex
	5-chloro-7-[ <sup>124</sup> I]iodo-8-hydroxyquinoline Zn(II) complex
5	5-chloro-7-[ <sup>124</sup> I]iodo-8-hydroxyquinoline Mn(II) complex
	5-chloro-7-[ <sup>18</sup> F]fluoro-8-hydroxyquinoline Fe(II) complex
	5-chloro-7-[ <sup>18</sup> F]fluoro-8-hydroxyquinoline Cu(II) complex
	5-chloro-7-[ <sup>18</sup> F]fluoro-8-hydroxyquinoline Zn(II) complex
	5-chloro-7-[ <sup>18</sup> F]fluoro-8-hydroxyquinoline Mn(II) complex
10	5-[ <sup>18</sup> F]fluoro-7-iodo-8-hydroxyquinoline Fe(II) complex
	5-[ <sup>18</sup> F]fluoro-7-iodo-8-hydroxyquinoline Cu(II) complex
	5-[ <sup>18</sup> F]fluoro-7-iodo-8-hydroxyquinoline Zn(II) complex
	5-[ <sup>18</sup> F]fluoro-7-iodo-8-hydroxyquinoline Mn(II) complex
	5-chloro-7-iodo-8-[ <sup>11</sup> C]methoxyquinoline Fe(II) complex
15	5-chloro-7-iodo-8-[ <sup>11</sup> C]methoxyquinoline Cu(II) complex
	5-chloro-7-iodo-8-[ <sup>11</sup> C]methoxyquinoline Zn(II) complex
	5-chloro-7-iodo-8-[ <sup>11</sup> C]methoxyquinoline Mn(II) complex
	5-chloro-7-iodo-8-hydroxyquinoline <sup>99m</sup> Tc complex
	5-chloro-7-iodo-8-hydroxyquinoline <sup>111</sup> In complex
20	5-chloro-7-iodo-8-hydroxyquinoline <sup>201</sup> Tl complex
	5-chloro-7-iodo-8-hydroxyquinoline <sup>67</sup> Ga complex
	5-chloro-7-iodo-8-hydroxyquinoline <sup>68</sup> Ga complex
	5-chloro-7-iodo-8-hydroxyquinoline <sup>67</sup> Cu complex
	5-chloro-7-iodo-8-hydroxyquinoline <sup>64</sup> Cu complex

25

## 10. Compounds according to claim 7:

	5-chloro-7-[ <sup>123</sup> I]iodo-8-hydroxyquinoline	Fe(II)	bis-
	chelate complex		
	5-chloro-7-[ <sup>123</sup> I]iodo-8-hydroxyquinoline	Cu(II)	bis-
30	chelate complex		
	5-chloro-7-[ <sup>123</sup> I]iodo-8-hydroxyquinoline	Zn(II)	bis-
	chelate complex		
	5-chloro-7-[ <sup>123</sup> I]iodo-8-hydroxyquinoline	Mn(II)	bis-
	chelate complex		
35	5-chloro-7-[ <sup>124</sup> I]iodo-8-hydroxyquinoline	Fe(II)	bis-

	chelate complex		
	5-chloro-7-[ <sup>124</sup> I]iodo-8-hydroxyquinoline	Cu(II)	bis-
	chelate complex		
	5-chloro-7-[ <sup>124</sup> I]iodo-8-hydroxyquinoline	Zn(II)	bis-
5	chelate complex		
	5-chloro-7-[ <sup>124</sup> I]iodo-8-hydroxyquinoline	Mn(II)	bis-
	chelate complex		
	5-chloro-7-[ <sup>18</sup> F]fluoro-8-hydroxyquinoline	Fe(II)	bis-
	chelate complex		
10	5-chloro-7-[ <sup>18</sup> F]fluoro-8-hydroxyquinoline	Cu(II)	bis-
	chelate complex		
	5-chloro-7-[ <sup>18</sup> F]fluoro-8-hydroxyquinoline	Zn(II)	bis-
	chelate complex		
	5-chloro-7-[ <sup>18</sup> F]fluoro-8-hydroxyquinoline	Mn(II)	bis-
15	chelate complex		
	5-[ <sup>18</sup> F]fluoro-7-iodo-8-hydroxyquinoline	Fe(II)	bis-
	chelate complex		
	5-[ <sup>18</sup> F]fluoro-7-iodo-8-hydroxyquinoline	Cu(II)	bis-
	chelate complex		
20	5-[ <sup>18</sup> F]fluoro-7-iodo-8-hydroxyquinoline	Zn(II)	bis-
	chelate complex		
	5-[ <sup>18</sup> F]fluoro-7-iodo-8-hydroxyquinoline	Mn(II)	bis-
	chelate complex		
	5-chloro-7-iodo-8-[ <sup>11</sup> C]methoxyquinoline	Fe(II)	bis-
25	chelate complex		
	5-chloro-7-iodo-8-[ <sup>11</sup> C]methoxyquinoline	Cu(II)	bis-
	chelate complex		
	5-chloro-7-iodo-8-[ <sup>11</sup> C]methoxyquinoline	Zn(II)	bis-
	chelate complex		
30	5-chloro-7-iodo-8-[ <sup>11</sup> C]methoxyquinoline	Mn(II)	bis-
	chelate complex		
	5-chloro-7-iodo-8-hydroxyquinoline	<sup>99m</sup> Tc	bis-chelate
	complex		
	5-chloro-7-iodo-8-hydroxyquinoline	<sup>111</sup> In	bis-chelate
35	complex		

	5-chloro-7-iodo-8-hydroxyquinoline complex	<sup>201</sup> Tl	bis-chelate
	5-chloro-7-iodo-8-hydroxyquinoline complex	<sup>67</sup> Ga	bis-chelate
5	5-chloro-7-iodo-8-hydroxyquinoline complex	<sup>68</sup> Ga	bis-chelate
	5-chloro-7-iodo-8-hydroxyquinoline complex	<sup>67</sup> Cu	bis-chelate
10	5-chloro-7-iodo-8-hydroxyquinoline complex	<sup>64</sup> Cu	bis-chelate

11. A pharmaceutical composition for diagnosis of diseases associated with protein deposition in the central nervous system comprising one of the compounds defined in claims 5 to 9.

12. A method for preparing the compounds defined in claims 5 and 8 comprising:

a) making a quinoline derivative react with an electrophilic aromatic halogenation reagent incorporating a radioactive halogen atom, or

b) making a quinoline derivative react with a radioactive halogenated derivative to effect an aromatic nucleophilic substitution reaction.

13. A method for preparing the compounds defined in claims 6 and 9 comprising:

a) making a quinoline derivative react with a metal or rare earth cation, or,

b) making a quinoline derivative react with a radioactive isotope of these elements

such that the metal or rare earth cation or the radioactive isotope of these elements is in a suitable oxidation state so as to produce the corresponding chelating product defined in claims 6 and 9.

14. A method for preparing the compounds defined in claim 7 comprising making a quinoline derivative react with:

a) a metal or rare earth cation, or,

b) a radioactive isotope of these elements.

5

in a suitable oxidation state so as to produce the corresponding chelating product defined in claims 7 and 10.